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(54) Means for anchoring an elongate member

(57) An anchoring device 1 for anchoring an elongate member to a flat plate 8 provided with a slot 6 leading to one edge 10 thereof, includes a sleeve 2 for fitting over the member and having a groove 4 slidable along the slot 6. A spring-loaded ring 14 is movable along the sleeve 2 to allow accommodation of the slotted plate within the groove 4 and is biased to interlock with a projection 12 on the plate 8.

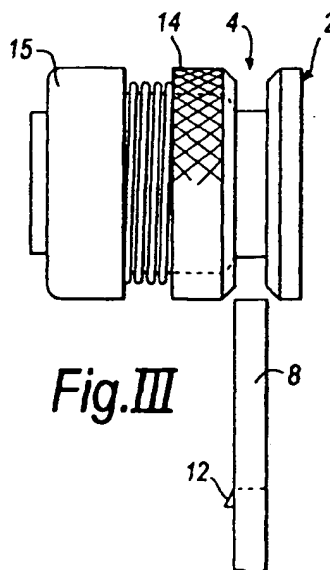


Fig. III

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Description

[0001] This invention relates to means for anchoring an elongate member to another member. The invention is made with particular reference to the anchoring of Bowden-type cables to fixed parts of the chassis or bodywork of an automobile, and the invention will be described in that context in this specification. It will, however, be appreciated that such an anchoring member can be used for anchoring many other elongate members, and many other circumstances.

[0002] As is well known, a Bowden-type cable is a device for translating a push/pull movement at one location to a push/pull movement (in the same or any different direction) at a different location, often for control purposes, and such a cable comprises a flexible conduit in which a control wire is slidable to perform the desired function. In order for the relative movement of the control wire and the conduit to take place in a controlled manner for the reliable operation of, for example, a clutch or gearbox mechanism or throttle of a motor vehicle, it is necessary that each end of the conduit should be anchored, for example to the body of the vehicle. In particular, the practice has developed of anchoring an end of the conduit to an opening in a bracket or bulkhead across which the control cable passes.

[0003] In a particular arrangement which is known for this purpose, this arrangement being that with which the present invention is particularly concerned, the bracket or bulkhead is provided with a generally circular hole near one edge, the hole being connected to that edge by a slot whose width is the diameter of the circular hole. That edge of a bulkhead may be a peripheral edge, or it may be an edge of another, larger hole formed within the bulkhead.

[0004] An anchoring sleeve or end fitting for the Bowden-type cable may comprise a neck of a diameter which will pass into the slot, in a direction which is parallel to the plane of the bracket or bulkhead and perpendicular to the axis of the cable, and a collar which may be slid or screwed axially of the anchor fitting to abut the bulkhead adjacent the slot and thus resist withdrawal of the anchor from the slot and also axial movement of the anchor relative to that slot.

[0005] In industry in general, and in particular in the automotive industry, there is a never ending search for the simplification or speeding up of the assembly process, and as one step in this search, there has arisen the proposal as set forth in EP-A-0 703 395 (Acco La Teledynamique SA) to provide a helically tensioned spring for the automatic screwing of such a collar. Such construction is, however, somewhat complicated, and it requires accurate centring within the slot before reliable anchoring can take place.

[0006] It is an object of this invention to provide an anchoring device in which a proper and reliable anchoring can be achieved easily and quickly.

[0007] According to the present invention, there is

provided an anchoring device which is suitable for anchoring an elongate member to a flat member having a slot leading to an edge thereof, which anchoring device comprises a sleeve which is fixable coaxially around said elongate member and which is formed with a peripheral groove whose axial length is sufficient to accommodate the thickness of such flat member at said slot, such groove defining a neck which is a close fit into said slot, and at least one ring member carried by the sleeve which is axially movable along said sleeve from a position in which it is spaced from and clear of said groove into a position in which it is adjacent said groove, in which position said ring forms an interlock with a projection on said flat member such as to prevent and resist withdrawal of the anchoring sleeve from the slot in the flat member.

[0008] Such an anchoring sleeve can be secured to a said flat member constituted by a portion of a bracket or bulkhead extremely easily and quickly to form a reliable anchorage for an elongate member surrounded by the sleeve.

[0009] A preferred embodiment of an anchoring device according to the invention will now be described by way of example only, with reference to the accompanying diagrammatic drawings in which:

Figure Ia shows a flat plate or bulkhead member;
Figure Ib shows a side view of the plate or bulkhead member shown in Figure Ia;
Figure II shows a side view of the device;
Figure III shows the device of Figure II in a first position in relation to the flat plate or bulkhead member of Figure I; and
Figure IV shows the device of Figure II in a second position in relation to the flat plate or bulkhead member of Figure I.

[0010] Referring to the drawings, there is shown an anchoring device 1 including a sleeve 2 adapted for fitting over an elongate member (not shown) such as a Bowden-type control cable. The sleeve 2 has a groove 4 which is slidable along a U-shaped slot 6 formed in a flat plate or bulkhead member 8, the slot 6 leading to an edge 10 of the plate 8 and a projection or latch 12 being formed adjacent the base of the slot 6.

[0011] A ring 14 is movable along the sleeve 2 against the pressure of a spring 16, which is held at its other end by a retaining cap 15 fixed on the sleeve 2; the ring is movable to a position where it is spaced from and clear of the slot 6 to allow the sleeve 2 to be engaged in the slot 6 in the flat plate or bulkhead member 8.

[0012] In Figure IV the ring 14 is shown moved along the sleeve 2 to a position abutting the flat plate or bulkhead member 8 and interlocking with the projection 12 thereon to prevent withdrawal of the sleeve 2 from the slot 6. In this position the sleeve 2 is firmly anchored to the flat plate or bulkhead member 8; and hence any

control cable passing through the sleeve 2 will be firmly anchored in the bulkhead or the like.

[0013] The sleeve 2 can be disengaged from the slot 6 after first sliding the ring 14 to the left of the drawing against the action of the spring 16 so that it no longer interlocks with the projection 12 on the flat plate or bulkhead member 8. 5

Claims

1. An anchoring device (1) for anchoring an elongate member to a flat member (8) having a slot (6) leading to an edge thereof, **characterised by** a sleeve (2) which is fixable coaxially around said elongate member and which is formed with a peripheral groove (4) whose axial length is sufficient to accommodate the thickness of such flat member (8) at said slot (6), such groove (4) defining a neck which is a close fit into said slot (6), and at least one ring member (14) carried by the sleeve (2) which is axially movable along said sleeve (2) from a first position in which it is spaced from and clear of said groove (4) into a second position in which it is adjacent said groove (4), in which second position said ring (14) forms an interlock with a projection (12) on said flat member (8) such as to prevent and resist withdrawal of the anchoring sleeve (2) from the slot (6) in the flat member(8). 10 15 20 25
2. A device according to Claim 1 **characterised in that** the at least one ring member (14) is spring-loaded towards the second position. 30
3. A device according to Claim 2 **characterised in that** the spring-loading is effected by an open coil compression spring (15). 35
4. A device according to any one of the preceding claims **characterised in that** the projection (12) on the flat member (8) is formed of a lip protruding from the surface of the member (8) adjacent the base of the slot (6) and engageable with the ring member (14). 40
5. An anchoring device according to any one of the preceding claims in combination with a Bowden-type cable. 45

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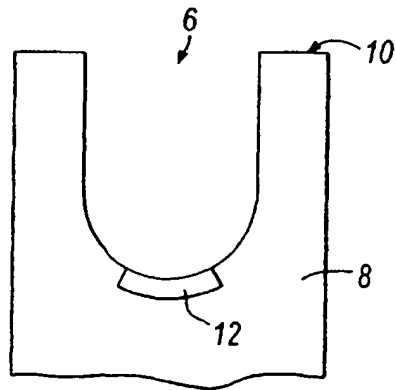


Fig. Ia

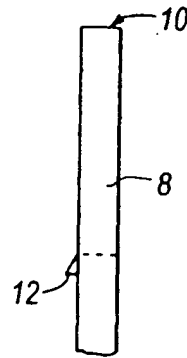


Fig. Ib

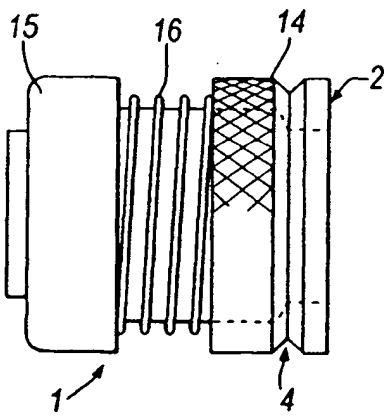


Fig. II

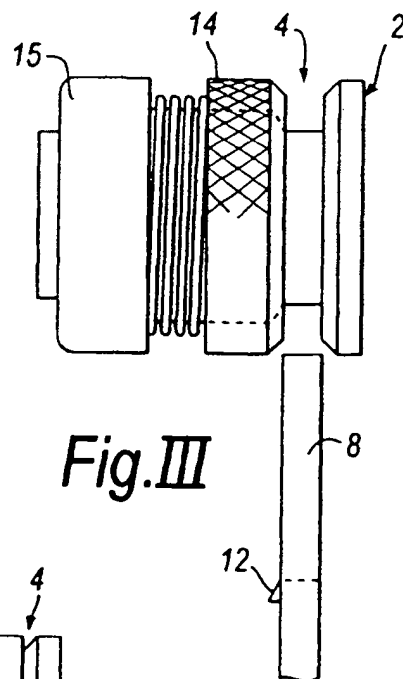


Fig. III

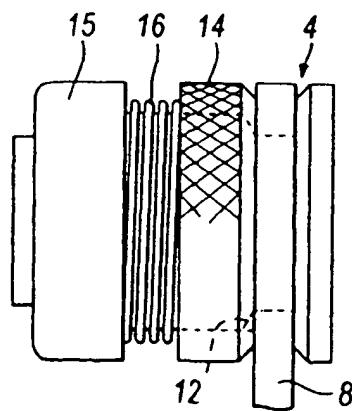


Fig. IV

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dable along the slot (6). A spring-loaded ring (14) is movable along the sleeve (2) to allow accommodation of the slotted plate within the groove (4) and is biased to interlock with a projection (12) on the plate (8).

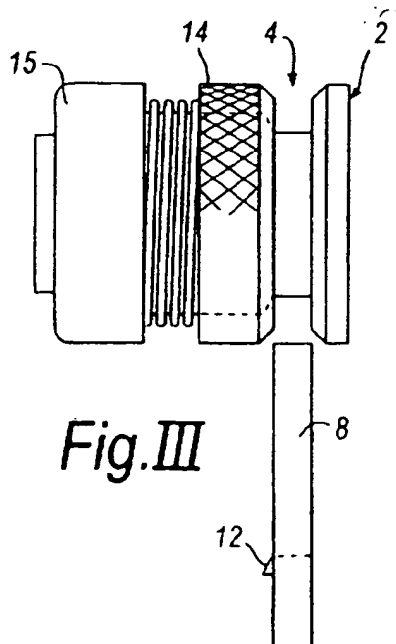


Fig. III

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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 0479

DOCUMENTS CONSIDERED TO BE RELEVANT					
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)		
X	US 5 347 882 A (KLOTZ STEVEN H) 20 September 1994 (1994-09-20) * abstract * * figures 2,3,6 * * column 2, line 5 - line 21 * * claim 1 *	1	F16B9/02 F16C1/26		
A	---	4,5			
P,X	DE 198 01 343 A (UNITED PARTS FHS AUTOMOBIL SYS) 22 July 1999 (1999-07-22) * the whole document *	1-5			
A	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 07, 31 March 1999 (1999-03-31) & JP 02 290096 A (BABCOCK IND INC), 29 November 1990 (1990-11-29) * abstract *	1-5			
A	FR 2 756 879 A (ADWEST OCI SA) 12 June 1998 (1998-06-12) * abstract * * claim 1 * * figures 7-9 *	1,4,5	<table border="1"> <tr> <td>TECHNICAL FIELDS SEARCHED (Int.Cl.7)</td> </tr> <tr> <td>F16C F16B</td> </tr> </table>	TECHNICAL FIELDS SEARCHED (Int.Cl.7)	F16C F16B
TECHNICAL FIELDS SEARCHED (Int.Cl.7)					
F16C F16B					
The present search report has been drawn up for all claims					
Place of search BERLIN		Date of completion of the search 2 July 2001	Examiner Schaeffler, C		
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background C : non-written disclosure P : intermediate document		I : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons Z : member of the same patent family, corresponding document			

EP 0 FORM 1503 03/92 (P2/001)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 30 0479

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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02-07-2001

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82